Eighth Quarterly Progress Report
(January - March 1975)

"A Cloud Physics Investigation Utilizing Skylab Data"

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Task I - Transmittances

a. Oxygen "A" Band

Calculations using the Lowtran II atmospheric transmission program, the solar spectrum, and S191 spectral response function were performed to see if the cause for the affect mentioned in previous Quarterly Report could be explained. These calculations show the affect. More calculations will be performed to further understanding of this affect.

b. 2.0 m CO_2 Band

The Lowtran II atmospheric transmission program, S191 spectral response, and solar spectrum will be used to compute for a variety of cloud pressure levels, solar zenith angles and atmospheric pressure levels, the expected absorption for the 2.0 m band.

Task II - Scattering Calculations

This task has been completed.

Task III - Cloud Models and Returned Signals

a. Cloud Models

This task has been completed.

b. Returned Signals

Pending completion of Task I b and finalization of our analysis procedures, we plan to combine the results of Tasks I, II, and III with instrument response data and solar spectra to simulate results.

Task IV - Deconvolution Procedure

There has been no change in the status of this task area since the last reporting period.

Task V - Background Meteorological Data

No additional background meteorological data was acquired during this reporting period.

Task VI - Analysis of Satellite Data

Analysis of the long wavelength data (i.e., the 1.61-, 2.06-, and 2.12 m channels) was begun. The data are screened for agreement in wavelength; the acceptance criterion being .003 m. The ratios $R_1 = \frac{I(1.61\ m)}{I(2.12\ m)}$ and $R_2 = \frac{I(2.06\ m)}{I(2.12\ m)}$ were computed for each individual scan. Then a mean value and a standard deviation were computed. Analysis of the short wavelength data has been delayed, pending study of a new reduction technique and the results of calculations described under Task I a.

SKYLAB DATA INVENTORY

DATE	TAPE	S042-1 Tabs	DAC Available
SL-2			
4 June (155)	Yes	Yes	
5 June (156)	Yes	Yes[1]	
9 June (160)	Yes	Yes[1]	DAC data of
10 June (161)	Yes	No[2]	poor quality
12 June (163)	Yes	Yes[3]	for SL-2
13 June (164)	Yes	Yes[3]	
14 June (165)	No	Yes	
SL-3			
5 Aug (217)	Yes	Yes	Yes
8 Aug (220)	No	No	Yes
9 Aug (221)	Yes	Yes[4]	Yes
10 Sep (253)	Yes	Yes[5]	No
12 Sep (255)	Yes	Yes[6]	No
15 Sep (258)	Yes	Yes	Yes
SL-4			
1 Dec (335)	Yes	No[7]	Yes
2 Dec (336)	Yes	Yes[7]	Yes
11 Jan (11)	Yes	Yes	Yes
12 Jan (12	Yes	Yes	Yes
18 Jan (18)	Yes	Yes	Yes
20 Jan (20)	Yes	Yes[8]	Yes
22 Jan (22)	Yes	Yes[9]	Yes
24 Jan (24)	Yes	Yes[10]	Yes
25 Jan (25)	Yes	Yes[10]	Yes
31 Jan (31)	Yes	Yes[10]	No

Footnotes

1 Very large and rapid changes occur in the S/C coordinates between 15:05:51.137 and 15:05:55.113 Z.

2 Have values for 12:55:57.355 and 13:12:56.656 Z only. Need intermediate values.

3 Have 5 values between 13:48:11.00 and 14:00:31.823 Z. Need intermediate values.

4 There is a time discrepancy between the tape and the S042-1 tabulations. Tape times are from 20:03:48 to 20:05:31 Z. Tabs are from 20:06:07 to 20:10:02 Z.

5 There are several "glitches" in the data which appear periodic. A copy of the tab sheet is enclosed with the glitches indicated.

6 Similar "glitches" appear in this data also.

7 From 16:44:06.120 to 16:44:25.627 all spacecraft coordinates are given as 99,999.xxx degrees; also 16:49:59.689 to 16:50:09.185.

8 There are a few "glitches" of the kind mentioned for 12 and 15 September.

9 The 99,999.xxx degree S/C coordinate problem occurs from 17:55:18.846 to 17:55:30.401.

10 The 99.999.xxx degree problem also occurs in data for January 25 and January 31.

ATTACHMENT

S191 BORESSIGHT CAMERA PULSE CORRELATION

PROJECT 1-DPCA-0-36-42-1
MISSION 3 ORBIT 36 SITE 0
SENSOR S191 RECORDING FORMAT FLIGHT DATE 12 SEP 73

GMT	AMT	D004-191 GEO DAT VOLTS	D005-191 RAD CAL VOLTS	P063-SKY SUN ELEV DEG	P026-SKY GEO LAT DEG	P023-SKY LONG DEG	P025-SKY OBL ALT KM	P071-SKY ZLV ROLL DEG	P072-SKY PITCH DEG	P073-S ZLV Y DEG
17: 8:19.873	17: 8:24.899	4.917	4.132	58.8	35.117	-80.611	426.472	359.794	359.920	0.0
17: 8:22.392	17: 8:26.730	4.917	4.127	58.7	35.238	-80.451	426.495	359.794	359.959	0.0
17: 8:22.540	17: 8:26.246	4.917	4.127	58.7	35.238	-80.451	426.495	359.794	359.959	0.0
17: 8:25.739	0: 0: 4.917	4.127	58.742	58.6	35.352	-80.272	426.521	359.797	359.965	0.0
17: 8:26.703	17: 8:30.223	4.917	4.132	58.6	35.391	-80.216	426.529	359.795	359.947	0.0
17: 8:27.171	17: 8:32.230	4.917	4.132	58.6	35.409	-80.193	426.533	359.868	359.921	359.9
17: 8:30.309	17: 8:33.777	4.917	4.132	58.5	58.332	35.673	-79.804	426.589	359.754	359.9
17: 8:30.596	17: 8:34.242	4.912	4.137	58.4	35.546	-79.990	426.562	359.913	359.901	359.9
17: 8:33.778	0: 0: 4.917	4.132	58.459	58.3	35.673	-79.804	426.589	359.797	359.972	0.0
17: 8:34.830	17: 8:38.294	4.917	4.137	58.3	35.717	-79.739	426.598	359.807	359.939	0.0
17: 8:35.498	17: 8:38.781	4.917	4.132	58.3	35.741	-79.704	426.603	359.808	359.927	0.0
17: 8:37.556	17: 8:40.277	4.917	4.132	58.2	35.823	-79.583	426.621	359.780	359.938	0.0
17: 8:38.024	17: 8:43.227	4.917	4.132	58.2	35.841	-79.555	426.625	359.778	359.944	0.0
17: 8:40.270	17: 8:43.742	4.917	4.132	58.1	35.930	-79.424	426.644	359.806	359.937	0.0
17: 8:45.041	17: 8:47.250	4.917	4.137	57.9	57.888	36.226	-79.011	426.704	359.969	0.1
17: 8:45.135	17: 8:47.766	4.917	4.147	57.9	36.122	-79.137	426.686	359.868	0.132	0.0
17: 8:47.249	0: 0: 4.917	4.137	57.912	57.8	36.206	-79.011	426.704	359.868	0.126	0.0
17: 8:47.942	17: 8:51.273	4.912	4.137	57.8	57.676	36.384	-78.772	426.738	359.935	0.0
17: 8:48.222	17: 8:51.765	4.917	4.137	57.8	36.244	-78.959	426.712	359.915	0.103	0.0
17: 8:51.272	0: 0: 4.912	4.137	57.985	57.7	36.384	-78.772	426.738	359.935	0.016	0.0
17: 8:51.029	17: 9: 0.254	4.917	4.127	57.7	57.330	36.714	-78.235	426.816	359.796	359.9
17: 8:51.263	17: 9: 3.809	4.917	4.127	57.7	36.363	-78.773	426.739	359.936	0.016	0.0
17: 9: 0.254	0: 0: 4.917	4.127	57.885	57.3	36.714	-78.235	426.816	359.796	359.951	0.0
17: 9: 0.606	17: 9: 5.282	4.912	4.127	57.3	36.730	-78.210	426.820	359.796	359.950	0.0
17: 9: 1.087	17: 9: 7.765	4.917	4.132	57.3	36.747	-78.185	426.824	359.795	359.9	0.0
17: 9: 5.325	17: 9: 8.770	4.917	4.127	57.1	35.911	-77.929	426.860	359.793	359.9	0.0
17: 9: 5.465	17: 9:10.312	4.912	4.132	57.1	36.316	-77.931	426.862	359.792	359.9	0.0
17: 9: 9.976	17: 9:13.305	4.917	4.147	56.9	56.817	37.219	-77.445	426.931	359.795	359.9
17: 9:10.069	17: 9:13.723	4.917	4.132	56.9	37.094	-77.645	426.902	359.796	359.914	0.0
17: 9:13.307	0: 0: 4.917	4.147	56.939	56.8	37.219	-77.445	426.931	359.796	359.900	0.0
17: 9:14.701	17: 9:16.916	4.912	4.142	56.8	37.272	-77.360	426.943	359.794	359.897	0.0
17: 9:15.028	17: 9:18.266	4.917	4.132	56.7	37.285	-77.340	426.945	359.793	359.930	0.0
17: 9:16.899	17: 9:20.324	4.912	4.127	56.7	56.537	37.487	-77.016	426.995	359.784	359.9
17: 9:17.274	17: 9:21.773	4.917	4.137	56.7	37.371	-77.203	426.966	359.795	359.933	0.0
17: 9:20.324	0: 0: 4.912	4.127	57.879	56.5	37.487	-77.016	426.993	359.794	359.932	0.0
17: 9:21.812	17: 9:24.770	4.917	4.127	56.5	37.544	-76.924	427.006	359.795	359.941	0.0
17: 9:69.535	17:10: 2.941	4.917	4.137	55.0	38.918	-74.619	427.339	359.844	359.998	0.0
17:10: 1.482	17:10: 6.965	0.000	4.142	54.8	39.026	-74.430	427.356	359.842	359.900	0.0
17:10: 6.113	17:10: 9.957	0.000	4.132	54.6	39.195	-74.132	427.409	359.804	359.909	0.0

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